

Linking Leadership and Learning

Judy Jeffrey, Iowa Department of Education
School Administrators of Iowa 2006 Annual Meeting



Have you read the headlines lately?





The Daily

Public schools still refuse
to turn away any student



The Daily

Schools continue to serve
as foundation for democracy



The Daily

Schools funnel skilled
employees into workforce

Unemployment remains low



The Daily

Colleges enjoy record enrollment
Thanks to quality K-12 schools

Leadership Role

Build on Strengths, Banish the Weaknesses



Leadership Role

Banish Weaknesses

- Tunnel Vision





Sobering Facts Economy

- Wal-Mart (nation's largest employer) & McDonalds created 44% of new jobs.
- Chemical companies closed 70 facilities in U.S. – tagged 40 more for shutdown. Of 120 chemical plants built in world with price tags of \$1B+ - one in U.S. and 50 in China.
- Companies can hire 9 Mexico factory workers for 1 U.S. worker.
- IBM recently sold its personal computer business to an entity in China.
- In 2005, American investors put more new money in foreign stock funds than in domestic stock portfolios.



Sobering Facts Higher Education

- South Korea – 38% of undergraduates receive degrees in natural science or engineering
 - France – 47%
 - China – 50%
 - Singapore – 67%
 - U.S. – 15%

World's Top 10 Economies

(Percent of World GDP)

1. U. S. (28.4%)
2. Japan (10.6%)
3. Germany (6.4%)
4. U.K. (5.0%)
5. France (4.8%)
6. China (4.4%)
7. Italy (3.9%)
8. Spain (2.6%)
9. Canada (2.5%)
10. India (1.7%)

Sources: World Bank/Angus Maddison, "The World Economy: Historical Statistics" (OECD)/
PricewaterhouseCoopers/Milken Institute/Goldman Sachs

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POP QUIZ:

Which countries are projected to NOT stay in the Top 10 by 2050?

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POP QUIZ:

Which countries are projected to be ADDED to the Top 10 by 2050?

World's Top 10 Economies

(Percent of World GDP)

- | | |
|------------------|---------------------------|
| 1. U. S. (28.4) | 1. China (25.6) |
| 2. Japan (10.6) | 2. U.S. (20.3) |
| 3. Germany (6.4) | 3. India (16.0) |
| 4. U.K. (5.0) | 4. Japan (3.9) |
| 5. France (4.8) | 5. Brazil (3.5) |
| 6. China (4.4) | 6. Russia (3.4) |
| 7. Italy (3.9) | 7. Indonesia (2.3) |
| 8. Spain (2.6) | 8. U.K. (2.2) |
| 9. Canada (2.5) | 9. Germany (2.1) |
| 10. India (1.7) | 10. Mexico (2.0) |

Sources: World Bank/Angus Maddison, "The World Economy: Historical Statistics" (OECD)/
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World's Top 10 Economies

(Percent of World GDP)

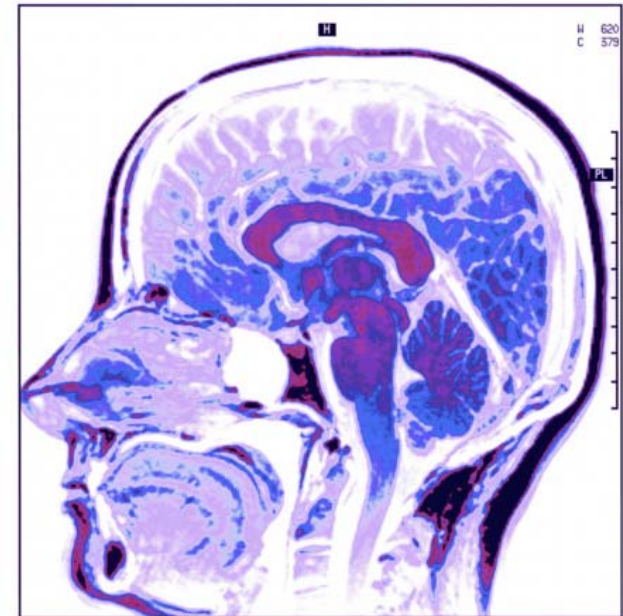
Today	2050	1820
1. U. S. (28.4)	1. China (25.6)	1. China (28.7)
2. Japan (10.6)	2. U.S. (20.3)	2. India (16.0)
3. Germany (6.4)	3. India (16.0)	3. France (5.4)
4. U.K. (5.0)	4. Japan (3.9)	4. England (5.2)
5. France (4.8)	5. Brazil (3.5)	5. Prussia (4.9)
6. China (4.4)	6. Russia (3.4)	6. Japan (3.1)
7. Italy (3.9)	7. Indonesia (2.3)	7. Austria (1.9)
8. Spain (2.6)	8. U.K. (2.2)	8. Spain (1.9)
9. Canada (2.5)	9. Germany (2.1)	9. U.S. (1.8)
10. India (1.7)	10. Mexico (2.0)	10. Russia (1.7)

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Sobering Facts

K-12 Education

- 1995 – U.S. 12th graders performed below the international average for 21 countries in general knowledge on math & science test.
- Growth in 11th grade Iowa proficient science students only 1% since 2001.
- 26% of Iowa students take physics.
 - Districts <250, 19.7%
 - 7,500>, 30%



Leadership Role

Banish Weaknesses

- Tunnel vision
- Achievement gaps

3 grade levels tested...

2 subjects tested...

5 ethnic groups tested...

= 30 data points

25 Improved



Achievement Gains

4th Grade Math
Percent Proficient

	2001-03	2004-06	
Hispanic	53.0%	61.8%	+ 8.8
Asian	80.0%	83.5%	+ 3.5
American Indian	55.8%	62.2%	+ 6.4
African American	42.7%	55.5%	+ 12.8
White	77.8%	82.7%	+ 4.9

Achievement Gains

8th Grade Reading
Percent Proficient

	2001-03	2004-06	
Hispanic	43.0%	47.0%	+ 4.0%
Asian	68.6%	70.9%	+ 2.3%
American Indian	49.2%	58.4%	+ 9.2%
African American	35.9%	44.1%	+ 8.2%
White	72.0%	74.1%	+ 2.1%



Achievement Gains

11th Grade Reading
Percent Proficient



	2001-03	2004-06	
Hispanic	53.5%	52.0%	- 1.5%
Asian	75.1%	79.1%	+ 4.0%
American Indian	62.5%	63.4%	+ 0.9%
African American	49.7%	51.4%	+ 1.7%
White	78.6%	78.7%	+ .12%

Leadership Role

Banish Weaknesses

- Tunnel vision
- Achievement gaps
- Curriculum

Model Core Curriculum

Depth vs. breadth

An Example from India ...

CLASS 8

Test Paper 1

*India
grade 8*

1. Evaluate:

(i) $\sqrt{194481}$ (ii) $\sqrt{1\frac{28}{36}}$ (iii) $\sqrt{2\frac{1}{4}}$

2. Simplify: $\sqrt{49} + \sqrt{0.49} + \sqrt{0.0049}$

3. Evaluate $\sqrt{7}$ up to three places of decimal.

4. Evaluate $\sqrt{0.4}$ up to three places of decimal.

5. What least number must be added to 269 to make it a perfect square?

6. The area of a square floor is 784 m^2 . Find its perimeter.

7. The sides of two squares are in the ratio 3:4. If their combined area is 12.25 hectares, find the length of the side of each square.

8. Find the cube root of $2\frac{10}{27}$.

9. Express $0.\overline{37}$ as a rational.

10. Find the value of $(8000)^{\frac{1}{3}}$.

11. Find the value of $(125)^{\frac{2}{3}}$.

12. Solve: $6^x = 216$

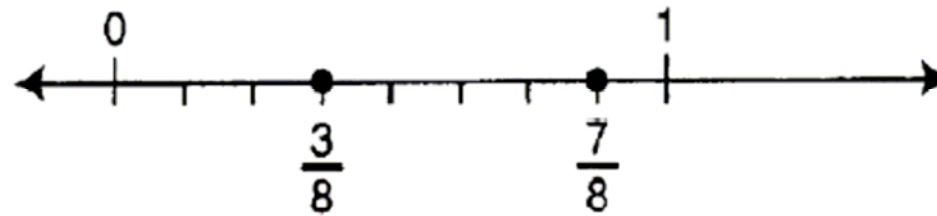
13. Simplify: $\frac{\sqrt{63} \times \sqrt{7}}{\sqrt[3]{27}}$

14. Divide: $2x^4 + x^3 - 27x^2 + 36x - 15$ by $(2x - 5)$.

... compared to the United States

Elementary and Middle School Student Performance

4. Which fraction is located between $\frac{3}{8}$ and $\frac{7}{8}$ on the number line?



A. $\frac{1}{4}$

B. $\frac{1}{2}$

C. $\frac{8}{8}$

D. $\frac{10}{8}$

Grade 3
19.1

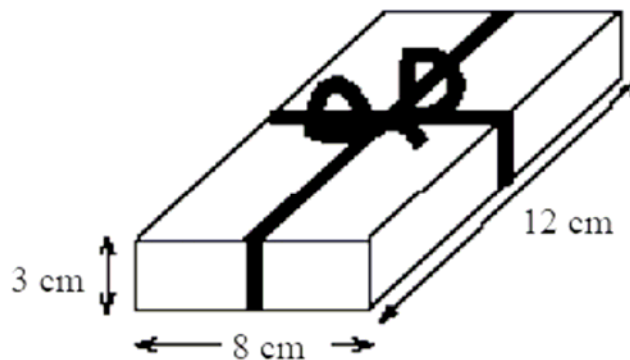
Grade 4
39.8

Grade 5
50.8

... compared to the United States

High School Student Performance

29. Stu wants to wrap some ribbon around a box as shown below and have 25 centimeters left to tie a bow.



How long a piece of ribbon does he need?

- A. 46 cm
B. 77 cm
C. 65 cm

Grade 9	Grade 10	Grade 11	Grade 12
38.0	41.0	43.3	50.2

Math Curriculum from Top Achieving Countries

Topic	Grade							
	1	2	3	4	5	6	7	8
Whole Number: Meaning	■	■	■	●	●			
Whole Number: Operations	■	■	■	■	●			
Measurement Units	▲	■	■	■	■	■	●	
Common Fractions			▲	■	■	●		
Equations & Formulas			▲	●	●	●	■	■
Data Representation & Analysis			▲	▲	●	●		▲
2-D Geometry: Basics			▲	●	●	●	■	■
2-D Geometry: Polygons & Circles				▲	●	●	■	■
Measurement: Perimeter, Area & Volume				●	●	●	●	▲
Rounding & Significant Figures				●	●			
Estimating Computations				●	●	●		
Whole Numbers: Properties of Operations				●	●			
Estimating Quantity & Size				▲	▲			
Decimal Fractions				●	■	●		
Relation of Common & Decimal Fractions				▲	■	●		
Properties of Common & Decimal Fractions					●	●		
Percentages					●	●		
Proportionality Concepts					●	●	●	▲
Proportionality Problems					●	●	■	■
2-D Geometry: Coordinate Geometry					▲	▲	●	●
Geometry: Transformations						●	●	●
Negative Numbers, Integers, & Their Properties						▲	●	
Number Theory							●	▲
Exponents, Roots & Radicals							●	●
Exponents & Orders of Magnitude							▲	▲
Measurement: Estimation & Errors							▲	
Constructions Using Straightedge & Compass							■	▲
3-D Geometry							●	■
Geometry: Congruence & Similarity								■
Rational Numbers & Their Properties								▲
Patterns, Relations & Functions								▲
Proportionality: Slope & Trigonometry								▲

▲ Intended by 4 out of the 6 top-achieving countries

● Intended by all but one of the top-achieving countries (5 out of 6).

■ Intended by all of the top-achieving countries.

Math Standards from 21 States

State A	State F	State K	State P	State U	State D	State S
State B	State G	State L	State Q	State E	State I	State O
State C	State H	State M	State R	State J	State N	State T

Leadership Role

Build on Strengths

- Invest in teachers



Leadership Role

Build on Strengths

- Invest in teachers
- Rely on data



Leadership Role

Build on Strengths

- Invest in teachers
- Rely on data
- 21st Century skills

Communication
Financial literacy
Creativity
Media literacy
Problem solving
Citizenship



Leadership Role

Build on Strengths

- Invest in teachers
- Rely on data
- 21st Century skills
- Relationships

Within the school
Between school and community



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